(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



- 1 (1848 - 1884) | 1 (1848 - 1848 - 1848 - 1848 - 1844 - 1844 - 1844 - 1844 - 1844 - 1844 - 1844 - 1844 - 1844 - 1844

(43) International Publication Date 17 February 2005 (17.02.2005)

PCT

(10) International Publication Number WO 2005/014619 A2

(51) International Patent Classification7:

C07K

(21) International Application Number:

PCT/US2004/009668

(22) International Filing Date: 29 March 2004 (29.03.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/458,241

28 March 2003 (28.03.2003) US

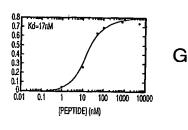
(71) Applicant (for all designated States except US): THOMAS JEFFERSON UNIVERSITY [US/US]; 1020 Walnut Street, Philadelphia, PA 19107 (US).

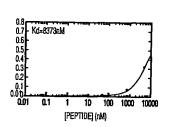
(72) Inventors; and

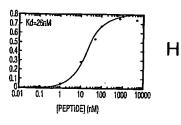
- (75) Inventors/Applicants (for US only): SAN ANTONIO, James, D. [US/US]; 641 Farnum Road, Media, PA 19063 (US). SCHICK, Barbara, P. [US/US]; 221 Welsh Terrace, Merion Station, PA 19066 (US). VERRECCHIO, Angela [US/US]; 1732 Spruce Street, #3R, Philadelphia, PA 19103 (US).
- (74) Agent: MONACO, Daniel, A.; Drinker Biddle & Reath LLP, One Logan Square, 18th and Cherry Street, Philadelphia, PA 19103-6996 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

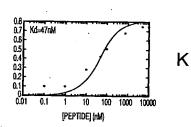
[Continued on next page]

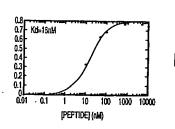
(54) Title: HEPARIN-BINDING PEPTIDES AND USES THEREOF

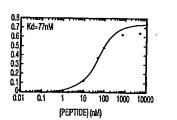












(57) Abstract: Heparin-binding peptides are provided of the for- $R_1(X_1B_1B_2X_2B_3X_3Y_1R_2)_nR_3$ $R_1(X_1B_1B_2B_3X_2X_3B_4X_4Y_1R_2)_nR_3$ $C(X_1B_1B_2B_3X_2X_3B_4X_4)_nC;$ X_1 , X_2 , X_3 , and X_4 are independently selected from the group consisting of hydropathic amino acids; B1, B2, B3, and B4 are independently selected from the group consisting of basic amino acids; C is cysteine; Y1 is zero or one to ten amino acid residues, wherein at least one amino acid residue is proline; n is an integer from one to ten; and R1, R2, and R3 are independently selected segments containing from zero to twenty amino acid residues, provided, at least one of the segments R₁, R₂, and R₃ comprises at least one hydrophobic amino acid residue. The peptide $C(X_1B_1B_2B_3X_2X_3B_4X_4)_nC$ is optionally cyclized via a disulfide bond formed between cysteine residues. The peptides are administered to reduce plasma LMWH and heparin levels and to reduce the anticoagulant effects of heparin and LMWH. The peptides are also administered to inhibit microbial growth and to inhibit mast cell serine proteases involved in various diseases and disorders. The peptides are also administered as carriers to deliver active agents.

٠.

WO 2005/014619 A2

PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.